The First Confirmed Case of Breast Implant-Associated Anaplastic Large Cell Lymphoma in Hawai'i

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Abstract

A 78-year-old woman within 3 years of of bilateral silicone gel breast implants for breast reconstruction due to breast cancer presented with heaviness and swelling in her right breast. Cytology of the aspirated fluid confirmed breast implant associated anaplastic large cell lymphoma (BIA-ALCL), and the patient underwent removal of implant and total capsulectomy. Breast implant-associated anaplastic large cell lymphoma is a rare entity, but if diagnosed early is a curable condition. This paper presents the first confirmed case of breast implant associated anaplastic large cell lymphoma in Hawai'i.

Keywords

surgery, breast augmentation, breast implants, breast implant-associated anaplastic large cell lymphoma

Abbreviations

ALK = anaplastic lymphoma kinase
BIA-ALCL = breast implant-associated anaplastic large cell lymphoma
BI-RADS = breast imaging reporting and data system

Introduction

Breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) is a rare peripheral T cell non-Hodgkin's lymphoma, which typically arises in the capsule or fluid surrounding a breast implant. The etiology of BIA-ALCL is unknown, but BIA-ALCL cases have occurred more frequently in association with textured surface implants. It has been proposed that the texture surface induces a chronic inflammatory reaction.[1-4] The neoplastic cells of BIA-ALCL are CD30 positive and ALK negative. They have characteristic horseshoe-shaped, or kidney-shaped, nuclei and prominent nucleoli with abundant eosinophilic cytoplasm.[4]

Case Report

A 78-year-old woman underwent bilateral breast reconstruction following mastectomy for breast cancer. Textured silicone gel breast implants were inserted on March 2013. On November 2015, the patient presented to the emergency room with heaviness in her right breast for two days. On examination she showed right breast swelling with no sign of infection. An ultrasound guided aspiration revealed 650 mLs of cloudy, yellow fluid. Cultures were negative. The patient had both implants and the anterior implant capsule removed. Portions of the anterior implant capsule as well as pieces of the residual thin film in the capsular space was submitted for cytologic studies. The cytology report indicated breast implant-associated anaplastic large cell lymphoma, CD30 positive and ALK negative (Figure 1). The patient subsequently underwent removal of the right breast implant and total capsulectomy. Histological studies of the removed capsules also showed breast implant-associated anaplastic large cell lymphoma that involved the capsule but not extending to the surrounding breast tissues. No masses could be identified grossly or microscopically.

The patient was followed regularly by an oncologist and she maintained a BI-RADS score of 2 with no evidence of malignancy on MRI through January, 2018. On July, 2018, a PET/CT showed a new nodule in the medial left upper lobe of the lungs. Biopsy of the lung confirmed non-small cell carcinoma, unrelated to the breast cancer, and the patient was treated with radiation therapy.

Discussion

Since the first breast augmentation in 1962,[5] the number of breast augmentation procedures have increased tremendously becoming the most common cosmetic surgical procedure performed by plastic surgeons during the past decades. There were 313 735 procedures conducted in 2018, a 48% increase since 2000.[6]

The first reported case of breast implant associated anaplastic lymphoma was published by Keech and Creech in 1997.[7] Increasing reports of BIA-ALCL have occurred since then, and as of September, 2018, the US Food and Drug Administration has received 457 reports of BIA-ALCL.[8] Anaplastic lymphoma appears to vary based on type of implants: 310 (68%) reports involved textured implants, 24 (5%) were associated with smooth implants, and 123 (27%) reports did not specify. Of the 457 reported cases, 274 (60%) involved silicone gel-filled implants and 183 (40%) were due to saline-filled prostheses.[8]

In 2016, the World Health Organization recognized BIA-ALCL as a distinct form of anaplastic large cell lymphoma, and classified BIA-ALCL as a mature T and NK neoplasm.[9] Doren and associates estimated a lifetime prevalence of BIA-ALCL in the United States of 1 in 30 000 patients with textured breast implants whether or not they are filled with silicone gel or normal saline.[10] Worldwide, the current incidence and risk of BIA-ALCL is estimated at 1 in 2 832 patients with textured breast implants.[11]

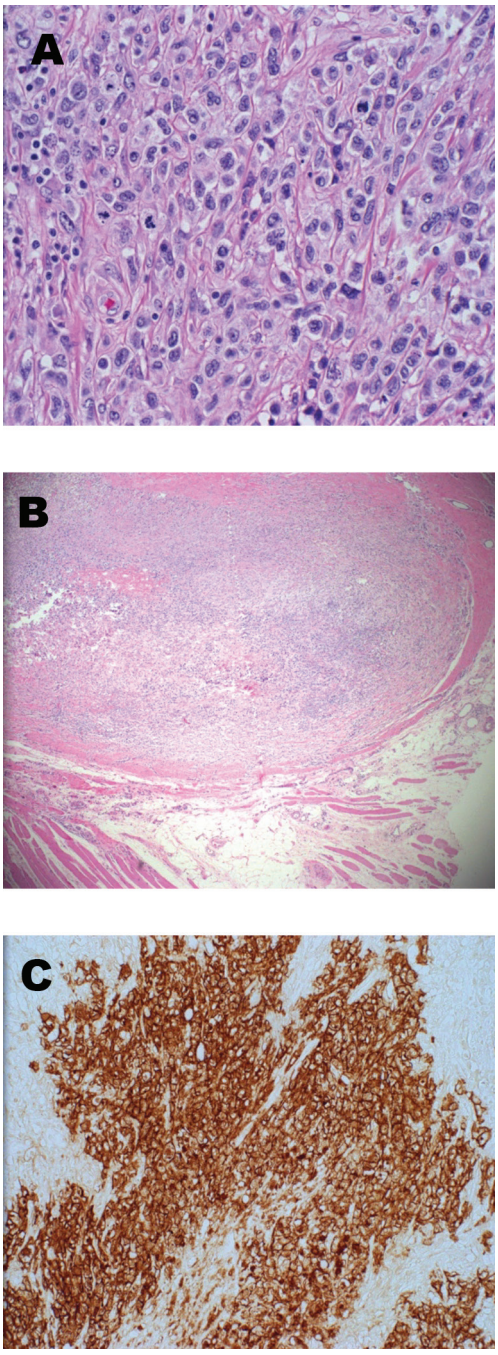

Figure 1. Large anaplastic lymphoma cells with abundant cytoplasm and pleomorphic nuclei at high power (A), low power (B), and an immunohistochemistry stain for CD30 diffusely positive (C).

Most cases of BIA-ALCL present approximately 10 years after breast implant placement and the median age of onset of BIA-ALCL in patients is about 50 years.[12,13] BIA-ALCL commonly presents with seroma accumulation between the fibrous capsule and breast implant, and in the absence of other causes of seroma accumulation, such as infection, implant rupture, or trauma.[4] The effusion may manifest as breast swelling, pain, and redness.[4,14] Less common presentations include a palpable mass, skin lesions, and axillary lymphadenopathy.[4,13,15]

The National Comprehensive Cancer Network (NCCN) recommends removal of the implant as well as the surrounding capsule and any suspicious associated masses. No adjunctive therapy is suggested in patients with localized disease that can be completely excised by total capsulectomy and removal of breast implant. However, adjunctive chemotherapy is suggested for cases of high risk patients with advanced disease BIA-ALCL that have not been completely resolved by surgery.[16] Clemens, et al, (2016) showed higher event-free survival and overall survival in patients treated with complete surgery (breast implant removal and total capsulectomy with complete excision of any associated mass and negative margins on final pathologic evaluation) compared to limited surgery (partial capsulectomy and implant removal) or chemotherapy or radiation therapy.[17]

To our knowledge, this is the first confirmed case of BIA-ALCL in Hawai‘i. As awareness of BIA-ALCL spreads, and with a 1 in 30 000 prevalence of BIA-ALCL, more cases of this condition are likely to present to physicians in the future. It is recommended that this subtype of anaplastic lymphoma should be on physicians' differential diagnosis when a patient presents with delayed onset of seroma (median onset is approximately 10 years after breast implantation), particularly if the patient had textured implants inserted. While these are the common presentations, there have been rare cases of BIA-ALCL presenting with earlier onset breast seroma and in association to smooth implants.

Conclusion

Breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) is a rare subtype of anaplastic large cell lymphoma associated with textured breast implants. Despite its rarity, BIA-ALCL has become more widely recognized as a concerning surgical complication. This paper presented the first confirmed case of BIA-ALCL in Hawai‘i. More cases are likely to occur in Hawai‘i, and so patients who receive breast implants need to be educated about this condition and monitored for common presenting symptoms, such as late onset breast swelling and pain.

Conflict of Interest

None of the authors identify a conflict of interest.

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